The

Monthly Evening Sky Map

A JOURNAL FOR THE AMATEUR — FOUNDED BY THE LATE LEON BARRITT
—NORTHERN AND SOUTHERN HEMISPHERE—

ALSO A STAR, CONSTELLATION AND PLANET FINDER MAP ARRANGED FOR THE CURRENT MONTHS — OCT. - NOV. - DEC MORNING AND EVENING — AND PRACTICAL ANYWHERE IN THE WORLD

PUBLISHED QUARTERLY

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Then Taurus bold, with his flaming eye,
Rises across the darkning sky,
Glorious, sparkling, wondrous sight
The beauty of a winter night.
First the Pleiades, all a-shining bright,
Greet us on a wintry night,
Merry Christmas
To The
Readers
Of The
Monthly
Evening
Sky Map
Orion next, above the trees
Outshines the rest and takes his ease,
He waits for Sirius, the great Dog Star,
Blazing, flashing from afar.

JUPITER

Jupiter, the fifth planet out from the sun, is known as the giant world of the Solar System. It is so called for the reason that its mass exceeds that of all the other planets combined. The equatorial diameter is 88,000 miles, or approximately eleven times that of earth; the polar diameter is 5,000 miles less, the difference being caused by the action of centrifugal force upon a swiftly rotating body whose density is only one-third more than that of water.

Although Jupiter is so large and so far from the sun, the distance being 483 million miles, it turns on its axis once in 9 hrs 55 min. This is the swiftest rotating speed of any planet. Could you stand on Jupiter's equator you would see his familiar stars pass overhead at the rate of 30,000 miles an hour. Viewed from Earth's equator their rate of apparent motion is only one-thousand miles an hour.

When looking at this giant planet through a suitable glass you will note, among other things, that its shape resembles a grapefruit, to use a homely illustration. Such a globe is called an oblate-spheroid. If the rotational speed ever slackens, the equatorial bulge must move poleward, and the planet will become more nearly a sphere. A globe with equal diameters in every direction might well be considered to be nature's goal. In this connection, one might wonder if Earth ever was a more pronounced oblate-spheroid than now, and if through the braking action of the tides the resultant retarded speed caused its then equatorial budge to move slowly toward the poles. Such mass movement may have had much to do with the bending and twisting of the rock strata so prevalent in mountains and hills. This suggestion is made to provide a little more food for thought—not that it necessarily is founded on fact however, it is known that our planet's rotational speed is slowly, very slowly, diminishing because of the braking action of old ocean's tides.

All are aware that Earth experiences seasonal changes, especially within the frigid and the temperate zones. To a considerable extent the changes are due to the 23½ degree tilt of the polar axis and also that the same direction of the axis is constantly maintained no matter where the planet may be along its orbit. We call that direction north.

In contrast, Jupiter's rotational axis is nearly vertical at all times. For that reason there never are any important changes in temperature at any given latitude. Thus, were there people on Jupiter they would need to climb the planet's mountains (if any) or travel north or south should they desire climatic changes. However, owing to the fact that when the solar energies have reached Jupiter they are reduced to practically one-twenty-seventh of their strength when they strike the Earth, it is apparent that climate, as such, does not show much variation anywhere on Jupiter. It is very cold on any location on the planet. A visitor from Earth would freeze to death at the equator just as quickly as if he had landed at one of the poles.

Although the intensity of the sunlight that reaches Jupiter is greatly reduced, it still is sufficiently strong to cause the planet to be exceptionally bright, even though it has travelled 483 million miles first from the sun, then almost as far to contact our eyes. You recall that light moves through space at the constant speed of 186,000 mils a second.

When viewing this giant world through a powerful glass you will find a series of parallel bands, or belts, encircling it, in both hemispheres as well as over the equator.

What their cause and why they are there are, as yet, unsolved problems; nor is it known why they exhibit various colors alternately bright and dull. Although red, brown and orange predominates, olive green and bluish patches occasionally are seen.

Strange as it may seem, one hemisphere may be alive with color, while the other is dull; then again, the entire surface will be of a reddish cast.

The belts vary in width from 1,000 to 10,000 miles, that over the equator being the broadest. The changes in outline are frequent and rapidly produced.

A peculiar and fairly stable feature of the planet's surface is a large red spot which was first observed in the year 1878. Its location is in the southern hemisphere, and its size is approximately 7,000 x 30,000 miles. At first this peculiar spot did not attract special attention, but a year later it had become the most conspicious feature of the planet. For two or three years it so remained, then gradually began to fade as if the lighter vapors were trying to hide it from view. Following a pronounced reappearance it was seen that the swiftly moving adjacent belts turned aside from their former normal courses to avoid it, somewhat as a stream veers to one side to pass a boulder that was blocking its way. From this, one would judge that the great red spot, as it is called, is composed of more solid matter than the belts. Possibly it is the very beginning of what may become a stabilized crust that will continue to spread until the entire surface is covered—but that is looking far, far ahead. Under great heat affined gases remain separate—an example being the sun—but with sufficient lowering of temperature they unite to form substance, as happened with the Earth.

So far as the Jovian almosphere is concerned, it is heavily impregnated with ammonia and methane gases, a feature that makes it impossible for the familiar forms of life to exist on that other world.

As becomes so large a globe, Jupiter is attended by at least eleven satellites, but only four can be seen in the smaller telescopes. For various reasons these four moons are of considerable interest to all oberservers of the starry heavens. They were the first objects to be discovered by the telescope, the fortunate observer being no less a personage than Galileo. The date was January 7, 1610. According to the astronomer Young, the announcement of their discovery excited among churchmen and other educators a great deal of angry credulity and vituperation!

Also, because of thes four satellites the fact that light-rays move through space at the constant rate of 186,000 miles a second was established. Briefly, this came about because Roemer, a Dutch astronomer of another century, had noticed that when any of the Jovian moons was being eclipsed by the body of the planet there were times when the phenomenon did not take place in accordance with the man-made schedule—in other words, when Jupiter and Earth were on opposite sides of the sun there was a lag up to sixteen minutes; and when our planet had reached a position between the sun and Jupiter the lunar disappearances took place according to the schedule. From this Roemer finally concluded that the interval between Jupiter's two positions relative to the Earth—a matter of 186 million—caused the reflected sunlight from the various moons—to be delayed all of sixteen miuntes. Further observations confirmed the conclusion that light possessed motion at the speed mentioned.

The eleven known satellites of Jupiter range in diameter from only 15 miles to 3,600, the later being nearly half again the size of our moon. The satellite nearest Jupiter is approximately 75,000 miles distant; ours is $240,000 miles from Earth.

According to Dr. Seth B. Nicholson, the discoverer of the 10th and 11th Jovian moons, there is great diversity in both the eccentricity and the inclination of all the lunar orbits; also that the 8th and 9th (numbered according to the date of discovery) swing farther from the planet itself than either of the two most recently found. He states further, that "although the arrangement of the five inner bodies reminds one of the first four planets around the sun, the outer six show great disorder when compared with the outer planets of the solar system. Only among the asteroids and comets do we find such a tangle of orbits." Still quoting: "The three most distant are unique in that their motion is opposite that of the other Jovian satellites which move in accordance with most of the bodies of the solar family—from west to east.".

As has been stated, it is believed that the planets, with their satellites, orinated through the close contact of our sun and another, possibly larger, sun while both were speeding along their prescribed paths through space, with the result that segments were pulled away from each of the two gaseous globes, later becoming the various planets and moons now in evidence.

Having this conception of the origin of the planetary system, it may not be far wrong to consider that these outer satellites of Jupiter's family were pulled away from the passing star by our sun, to remain as captives while the system remains; also that our sun lost to that

other sun something of its mass, now gone forever more. Of all this we have no knowledge. Even so it does no harm to speculate regarding the possibility that the erring members of the solar family came from another source.

Jupiter requires 11.86 of our years for a singgle trip around the sun at the speed of 8 miles a second, so it takes a year for one of the zodiacal constellations.

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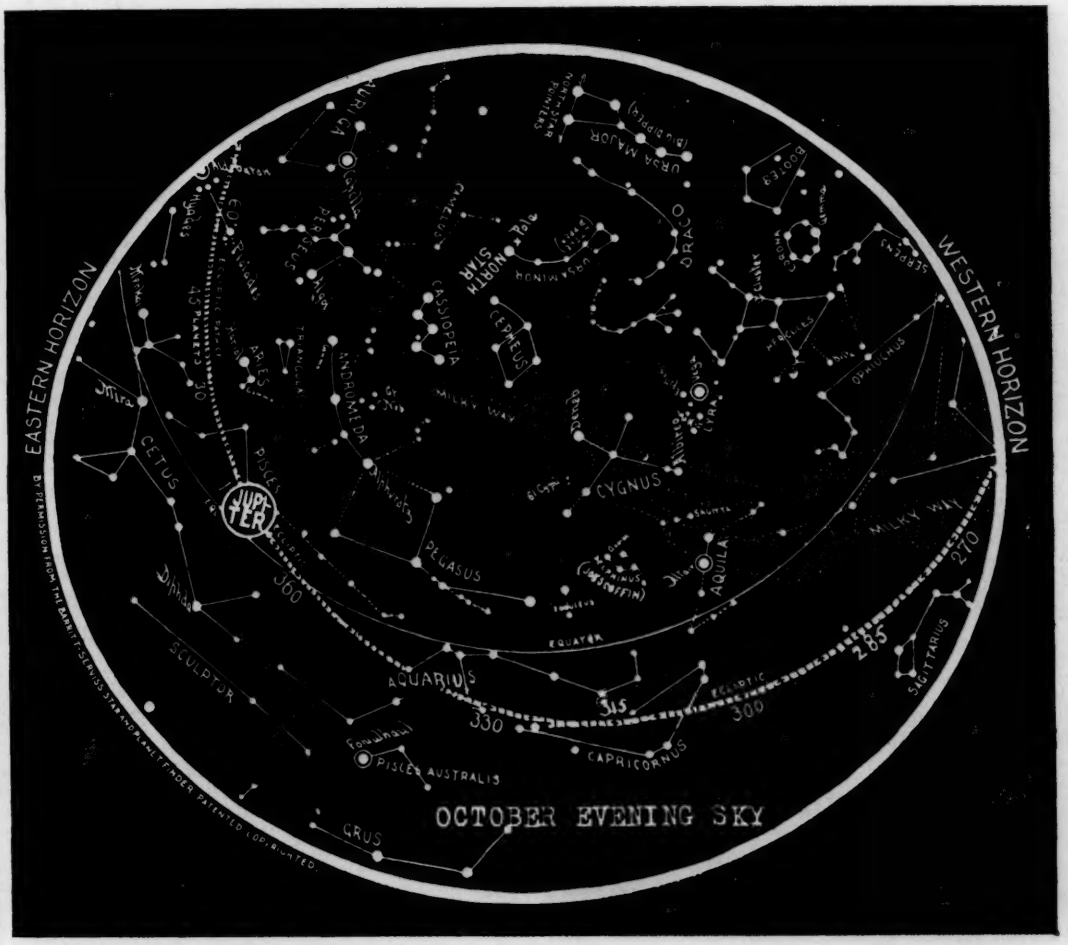
THE LYRIDS

In 1867 meteors took their proper place in astronomy. Before that year they had not been considered worthy of careful observation. A handful of pioneers in Europe and America did all the work which was of any value. Most astronomers had more "important" things to accomplish.

The Nov. display in 1866 stirred the interest of both public and the astronomers. That same year Schiaparelli announced that the Perseids followed an orbit similiar to the orbit of Tuttle's Comet. He suggested that there was a physical connection between the two. After the Leonid shower several astronomers began calculating the orbit of the swarm which caused it. In January, 1867, three of them reached the same conclusions. Within five days of each other, Schiaparelli, C. F. Peters and von Oppolzer all announced that the Leonids ran in the track of Temple's Comet. In February Weiss and d'Arrest independently pointed out the relation between Biela's Comet and the Andromedes and at the same time Weiss remarked that in several past years meteors had been recorded on April 20, when the orbit of Comet 1861 was within 0.002 astronomical units of the earth. Johann Galle of Breslau (the same Galle who as an assistant at Berlin, discovered the planet Neptune) undertook the derivation of the orbit of meteors. He was finally able to show that their orbit was similar to that of the comet's.

EVENING SKY MAP FOR OCTOBER



Face South And Hold The Map Overhead. The Top North And You Will See The Stars And Planets Just As They Appear In The Heavens. The Arrow Through The Two Stars In The Bowl Of The Big Dipper Points To The North Star. The Star At The End Of The Little Dipper.

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AMATEUR'S FORUM
October, 1951

By IRVING L. MEYER, M. S.

THE SUN: moves through Virgo to the Libra border. Distance the 1st is 95.0 million miles, and the 31st is 92.2 million miles.

THE MOON: is at perigee (closest to the earth) the 7th at a distance of 230,000 miles, and is at apogee (farthest from the earth) the 21st at 251,000 miles distance.

The Moon's Phases (E. S. T.):

First Quarter	October 7	at 7:00 P. M.
Full Moon	14	at 7:51 P. M.
Last Quarter	22	at 6:55 P. M.
New Moon	30	at 8:54 A. M.

MERCURY: moves from Virgo into Libra, but too close to the Sun all month to be observable. It appears in the morning sky until superior conjunction with the Sun on the 13th, thereafter is an evening star. Maximum distance, the 20th, is 133 million miles.

VENUS: in the Sextans-Leo region at the beginning of the month, goes into Virgo. It is in the morning sky, and achieves greatest brilliancy, magnitude —4.3, the 10th. It is well placed for observation, drawing further and further from the Sun, and accordingly, rising earlier and earlier before the Sun. Distance from the earth is increasing; during the month from 35 million miles and 45" diameter to 54 million miles and 29" diameter. It will appear crescent shaped in the telescope, being 19% illuminated the 1st compared with 42% the 31st.

JUPITER: comes to opposition the 2nd in Pisces. On this date it will be a brilliant —2.5 magnitude, just about the brightest it can ever become, since Jupiter is in perihelion (closest to the Sun) on November 21st. Equatorial diameter will be 49.9", polar diameter will be 46.", and geocentric distance 367 million miles. The four bright moons will be visible in opera glasses, while telescopes will reveal the cloud bands on the disc of Jupiter, as well as the flattening at the poles.

SATURN: in Virgo, is in the morning sky, too close to the Sun to be observable. Distance the 15th is 977 million miles.

URANUS: still high above the equator, in Gemini, makes its slow way eastward. It rises about midnight, and is well placed for observation in the early hours of the morning. Magnitude of about 6 makes it visible to the unaided eye on a moonless night; it is an easy object for any optical aid. Distance the 15th is 1736 million miles.

NEPTUNE: in Virgo, leaves the evening sky with conjunction with the Sun on the 13th. Too close to the Sun all month to be observable. Distance from the earth (maximum) the 12th is 2908 million miles.

AMATEUR'S FORUM
November, 1951

By IRVING L. MEYER, M. S.

THE SUN: moving deeper and deeper into the southern heavens, moves across Libra intoScorpio. It is 92.2 million miles away the 1st against 91.6 million miles the 30th.

THE MOON: is closest to the earth twice during the month, on the 2nd at 227,000 miles and the 30th at 224,000 miles, and is farthest the 18th at 252,000 miles.

The Moon's Phases (E. S. T.):

Orbits and Heliocentric Movements of the Planets for Oct., 1951

NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

First Quarter	November 6	at 1:59 A. M.
Full Moon	13	at 10:52 A. M.
Last Quarter	21	at 3:01 P. M.
New Moon	28	at 8:00 P. M.

MERCURY: moves from Libra through Scorpio into Sagittarius: It is in the evening sky all month but is best observable for about a week around the 28th — the date of greatest elongation east, 21° 40'. At that time it will be visible low in the west in the twilight, shortly after sunset. Magnitude is —0.2. Distance the 1st is 130 million miles and the 30th is 91 million miles.

VENUS: in the morning sky, is well placed for observation, as it reaches greatest elongation west of the Sun, 46° 39', on the 14th. It is a brilliant object in Virgo, a few degrees east of Mars on the 1st, a half degree south of Saturn on the 21st (this will be a pretty sight, with Saturn magnitude 1.1), and a half degree north of Neptune on the 29th. During the month, Venus changes appearance from a crescent, 29" in diameter, magnitude —4.1, and distance 55 million miles to a gibbous 21" in diameter, magnitude —3.9, and distance 75 million miles.

MARS: in the morning sky, is a reddish, 2nd magnitude object but still not well placed for observation. It rises well after midnight, and is best situated just before the beginning of morning twilight. Distance the 1st is 194 million miles against 172 million miles the 30th.

JUPITER: in Pisces just north of the equator, is an evening star of great brilliance. It is well placed for observation, and is above the horizon most of the night. On the 15th, magnitude is —2.3, equatorial diameter 47", and distance 392 million miles.

SATURN: is in Virgo in the morning sky. Aside from the fine conjunction with Venus, on the 21st, this planet is not well situated for observation, as it is still pretty close to the Sun. Distance the 15th is 955 million miles.

URANUS: is in Gemini, rises early in the evening, and is well placed for observation. A sixth magnitude planet, it takes a clear atmosphere, a moonless night, and a sharp eye to detect it without optical aid. In the telescope, it reveals a neat, round disc, greenish, and about 4" in diameter. Easy for 50 diameters. Distance the 15th is 1691 million miles.

NEPTUNE: also in Virgo in the morning sky, is an 8th magnitude object, and is not well placed for observation. Distance the 15th is 2893 million miles.

XUM

Orbits and Heliocentric Movements of the Planets for Nov., 1951

NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

PLANETARY CONFIGURATIONS

Eastern Standard Time

October, 1951

Oct.	1— 9:30 PM	Conjunction, Ueptune and Moon; Neptune north 5° 26'
Oct.	2—11:00 PM	Opposition, Jupiter and Sun
Oct.	6— 1:00 AM	Conjunction, Mercury and Saturn; Mercury south 0° 35'
Oct.	7— 7:00 PM	Quadrature, Uranus and Sun
Oct.	10— 2:00 PM	Venus greatest brilliancy
Oct.	12— 2:00 AM	Jupiter greatest heliocentric latitude south
Oct.	13— 5:00 AM	Conjunction, Neptune and Sun
Oct.	13—10:00 AM	Superior conjunction, Mercury and Sun; Mercury north 0° 59'
Oct.	13—11:00 AM	Conjunction, Mercury and Neptune; Mercury south 0° 40'
Oct.	13—11:18 PM	Conjunction, Jupiter and Moon; Jupiter south 4° 36'
Oct.	20— 4:00 PM	Uranus stationary in Right Ascension
Oct.	21—12:10 PM	Conjunction, Uranus and Moon; Uranus south 3° 52'
Oct.	22—10:00 AM	Mercury in descending node
Oct.	26—11:49 AM	Conjunction, Mars and Moon; Mars south 2° 5'
Oct.	26— 6:24 PM	Conjunction, Venus and Moon; Venus south 0° 2'
Oct.	28— 1:23 PM	Conjunction, Saturn and Moon; Saturn north 5° 22'
Oct.	29— 8:18 AM	Conjunction, Neptune and Moon; Neptune north 5° 30'
Oct.	31— 6:55 AM	Conjunction, Mercury and Moon; Mercury north 3° 58'

PLANETARY CONFIGURATIONS

Eastern Standard Time

November, 1951

Nov.	1— 5:00 PM	Mercury in aphelion
Nov.	2— 9:00 AM	Mars greatest heliocentric latitude north
Nov.	2—11:00 AM	Venus in ascending node
Nov.	10—12:59 AM	Conjunction, Jupiter and Moon; Jupiter south 4° 22'
Nov.	14— 4:00 AM	Venus greatest elongation west, 46° 39'
Nov.	17— 7:14 PM	Conjunction, Uranus and Moon; Uranus south 3° 39'
Nov.	21— 2:00 AM	Jupiter in perihelion
Nov.	21— 5:00 AM	Conjunction, Venus and Saturn; Venus south 0° 38'
Nov.	22— 1:00 AM	Mercury greatest heliocentric latitude south
Nov.	24— 6:26 AM	Conjunction, Mars and Moon; Mars north 4° 9'
Nov.	25— 4:58 AM	Conjunction Saturn and Moon; Saturn north 5° 51'
Nov.	25—12:49 PM	Conjunction, Venus and Moon; Venus north 5° 47'
Nov.	25— 8:19 PM	Conjunction, Neptune and Moon; Neptune north 5° 43'
Nov.	28— 6:00 AM	Mercury greatest elongation east, 21° 40'
Nov.	29—11:00 AM	Conjunction, Venus and Neptune; Venus north 0° 32'
Nov.	30— 8:43 AM	Conjunction, Mercury and Moon; Mercury north 2° 22'
Nov.	30— 2:00 PM	Jupiter stationary in Right Ascension

THE FASCINATING DOME

The great dome of the sky filled with glittering stars is one of the most sublime spectacles in nature. To enjoy this fully, a night must be chosen when the air is clear, and the moon is absent. We then gaze upon a deep blue, an immense expanse studded with stars of varied color and brilliancy. Some shine with a vivid light, perpetually changing and twinkling; others more constant, beam tranquilly and softly upon us, while many just tremble into our sight, like a wave that, struggling to reach some far-off land, dies as it touches the shore.

In the presence of such weird and wondrous beauty, the tenderest sentiments of the heart are aroused, a feeling of awe and reverence, of softened melancholy mingled with a thought of the Creator, comes over us, and awaken the better nature within us. Those far-off lights seem full of meaning to us, could we but read their holy message; they become real and sentient, and, like the soft eyes in pictures, look lovingly and inquiringly upon us. We come into communion with another life, and the soul asserts its immortality more strongly than ever before. We are humbled as we gaze upon the infinity of worlds, and strive to comprenend their enormous distances, their magnificent retinue of suns. The powers of the mind are aroused, and eager questionings crowd upon us. What are those glittering fires? What their distances from us? Are they worlds like our own? Do living, thinking beings dwell upon them? Are they carelessly scattered through infinite space, or is there an order of the universe?

Many of these problems have been solved; others yet await the astronomer whose keen eye shall be strong enough to read the mysterious scroll of the heavens. Three hundred generations of study have revealed to us such startling facts, that we wonder how man in his feebleness can grasp so much, see so far, and penetrate so deeply into the mysteries of the universe. Astronomy has measured the distance of many of the stars, and of the planets; computed their weight and size, their days, years, and seasons, with many of their physical features; made perfect the discription and conditions found upon the moon, tracked the comets in their immense sidereal journeys, marking their paths to a nicety of which we can scarcely conceive, and at last it has analyzed the structure of the sun and far-off stars, announcing the very elements of which they are composed.

Then,t oo, diagonally girdling the heovens, is a whitish vapory belt, "The Milky Way." This is composed of multitudes of millions of suns (of which our sun itself is one) so far removed from us that their light mingles, and makes only fleecy whiteness. This magnificent panorama of the heavens is before us, inviting our study, and waiting to make known to us the grandest revelation of science.

Believing that Natural Science is full of fascination, I have sought to weave this story by the collection of the pictures in "Barritt's Celestial Album," and bound them together in one book, bringing to the amateur a vision of these far-distant worlds. The pages, therefore, are not burdened with a multitude of figures which no memory could possibly retain.

Finally, I have compiled this little work, and commit same to the hands of the young, to whose instruction he who first made this magazine possible consecrated the energies of his life, in the earnest hope that, loving Nature in all her varied phases, they may come to understand somewhat of the wisdom, power, beneficence, and grandeur, displayed in the divine harmony of the Universe.

M. B.

A Lasting Christmas Gift For 365 Days

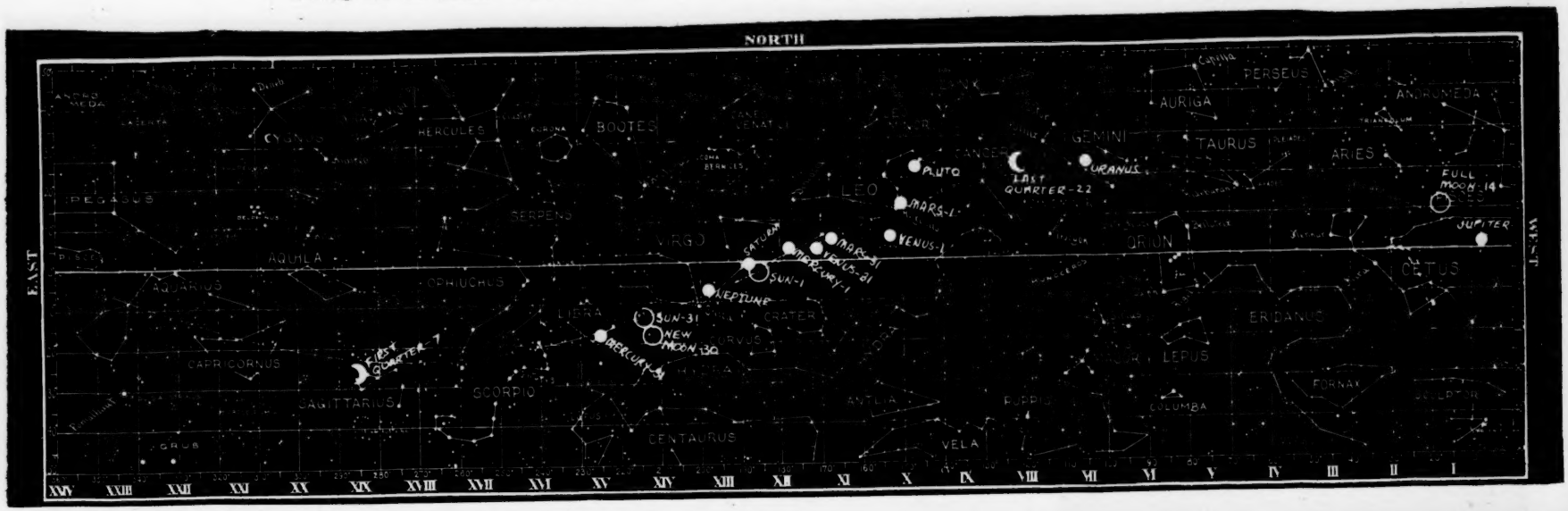
"The Monthly Evening Sky Map"

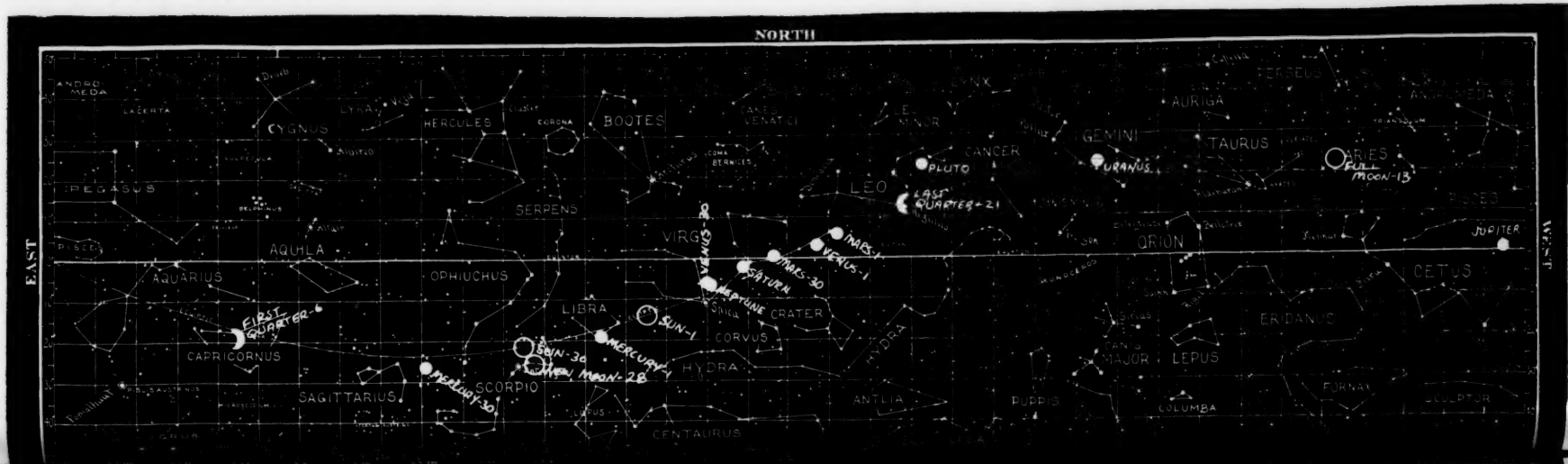
In selecting your Gifts include a subscription to the Monthly Evening Sky Map for your friends. It will bring them a year of intellectual pleasure, and lay the foundation for a life time of intelligent observation of the heavens in young people.

XUM

A MERCATOR PROJECTION OF THE STAR FIELD FOR 50 DEGREES NORTH AND 65 SOUTH OF THE EQUATOR

The Star Field makes an apparent complete revolution westward every 24 hours, hence the hourly division from I to XXIV, but this has no relation to the time that any portion of the map is in view.
Practical as a Star, Constellation and Planet Finder for the current months— October-November-December, 1951—Anywhere in the world.
Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at it's several phases.





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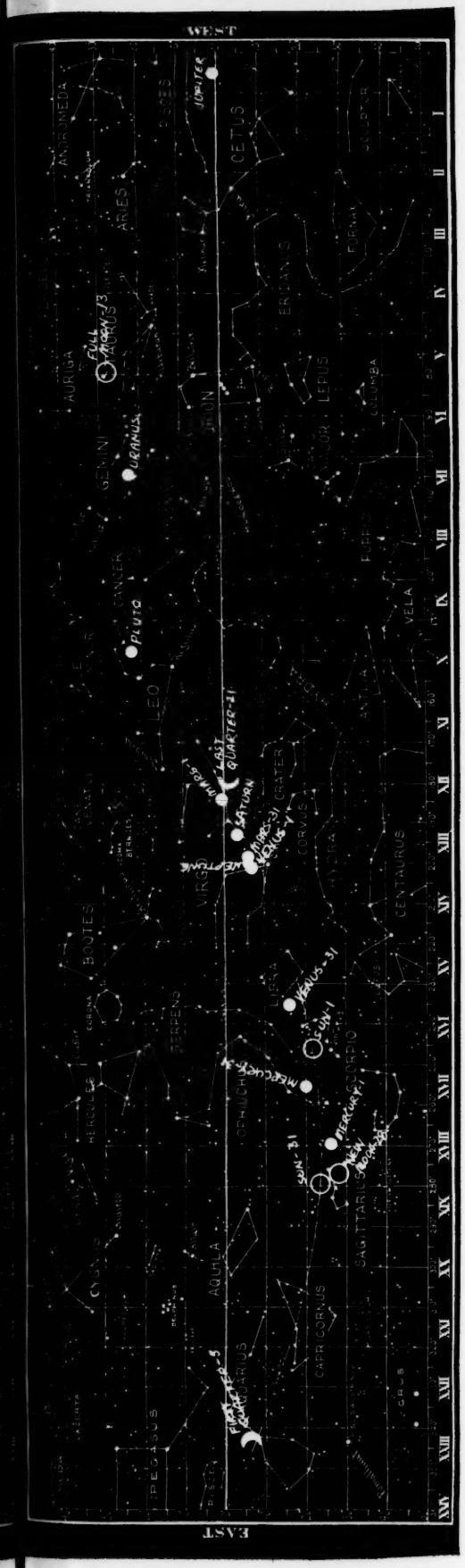


Nov. 5 Oct. 22 Oct. 5 Sept. 20 Sept. 5 Aug. 20 Aug. 5 July 20 July 5 June 20 June 5 May 20 May 5 Apr. 20 Apr 5 Mar. 20 Mar. 5 Feb. 18 Feb. 2 Jan. 20 Jan. 5 Dec. 20 Dec. 5 Nov. 20
THE DATE BELOW EACH NUMERAL WILL SHOW WHEN THAT SECTION OF THE MAP WILL BE ON THE MERIDIAN—DUE SOUTH—AT 9 P. M. OR AN HOUR EARLIER FOR EACH NUMERAL WEST OF THIS DATE AND AN HOUR LATER FOR EACH NUMERAL EAST.

The Stars and Constellations

Overhead in November reigns Andromeda, the heroine of the ancient mythological story of the royal house of Ethopia, to which reference has before been made in these articles. Andromeda can easily be recognized by means of a row of conspicious stars of the second magnitude, beginning with the northeastern corner of the Great Square of Pegasus and running off to near the edge of the Milky Way, northeast of the zenith.

Between Andromeda and the pole star appears Cassiopeia, who in the legend was Andromeda's royal mother, and whose constellation is clearly marked out by a zig-zag of stars bearing some resemblance to the letter "W." The story relates that it was Cassiopeia's vanity leading her to boast that her beatuy exceeded that of the sea nymphs, which resulted in her daughter being chained to a rock on the sea coast to be devoured by a sea monster. Below the last star in Andromeda, in the southeast, and striding across the Milky Way, appears the hero Perseus who rescued the maiden by turning the monster into stone by the sight of the gorgon Medusa's head which he had cut off. The stars of Perseus form a bending row following the curve of the Milky Way.

Almost directly north of the highest star in Perseus, and forming an angle with that star and the star in Andromeda's foot, is the celebrated variable Algol in the little constellation representing the head of Medusa, the gorgon. This star is, in many ways the most remarkable in the heavens. Every two days, twenty hours and forty-nine minutes it falls to a minimum, having in the course of three or four hours lost two-thirds or three quarters of its light. Then it immediately begins to brighten again, and in two or three hours once more shines with the brilliance of a second magnitude star. The cause of these rapid periodic changes is believed to be the existence of a huge dark mass, either an extinguished star, or a dense meteoric swarm, circling close around Algol, and eclipsing it at regular intervals.

Another remarkable variable star commands attention this month—Mira, "the Wonderful," in the constellation Cetus. Its maximum period is irregular. On the average 331 days elapse from one maximum to the next, but the maximum may come a fortnight ahead of time or a fortnight behind. The brightness of the star at maximum is also irregular, exceeding the second magnitude at times. But generally it is only of the fourth magnitude when at maximum. At minimum it disappears entirely for the naked eye, sinking to the eighth or ninth magnitude. It is probable that the variability of Mira arises from an entirely different cause than that concerned in the case of Algol. Instead of being due to eclipses, the variations of Mira's light no doubt originate from something in the constitution of the star itself.

November is the great month for meteors, two famous showers falling within its limits. The first of these is the shower of Leonids, so called because the meteors radiate from the head of the lion in the constellation of Leo. They are due on the 14th or 15th, and to see them one must get up in the early morning hours, as Leo does not rise before midnight.

These meteors were wonderfully numerous in 1833 and 1866, but since then they have not been seen in such vast numbers. It has been shown that the planets Jupiter and Saturn have drawn most of them aside from the orbit which they formerly pursued.

The other meteor shower is that of the Andromedes, due on the night of the 23rd. They radiate from the constellation Andromeda, and are associated with Biela's comet, which disappeared in the first half of the nineteenth century.

The reader will observe that the great array of constellations which makes the Winter sky so magnificent is now rising; above him is Taurus, and still higgher the Pleiades. In the noreast below Perseus glitters the brilliant Capella in the constellation Auriga. The Great Dipper is under the pole in the north, and Vega scintillates in the northwest, a worthy rival of Capella in the northeast.

XUM

The Stars and Constellations For December

The map is set for 9 p.m. on December 1st and 7 p.m. on December 31st the first object to strike the eye of the observer who has clear horizon are the constellations that form the glory of the winter skies now rising in the east First comes Taurus, the Bull, carrying the beautiful Pleiades on his flank and the Hyades, with the red first magnitude star Aldebaran, on his head. Then follows the matchless Orion, with his two great first magnitude stars Rigel and Betelgeuse, and his flaming Belt, composed of three bright second magnitude stars in a short row. Just on the edge of the eastern horizon the king of the stars, Sirius, is seen blazing and flickring with prismatic hues. Above Taurus shines the bright Capella in Auriga, a star fully the equal of the great brilliants of Orion, and east of Capella may be seen Gemini with its twin stars Castor and Pollux. Near the horizon, east of Gemini and north of Sirius shines the first magnitude star of Procyon. If, as is usually done, we count both Castor and Pollux as first magnitude stars, then this remarkable group of constellations contains eight stars belonging to the first rank, and several of the second. On a clear evening the spectacle that they offer is a most imposing one for any contemplative onlooker. All of these stars are immensely larger than our sun, and two of them—Rigel and Betelgeuse—are probably thousands of times more luminous than our great god of day. The wonder is increased by the fact that Betelgeuse is variable, being sometimes twice as bright as it is other times. Its changes are slow and iirregular, and at present it is in one of its brilliant moods, fully equalling if not exceeding Rigel, from which it differs in color. Full in the south, and covering a vast space, is the great constellation Cetus, the Whale, whose remarkable star Mira, a wonderful variable, is now sinking in brightness, and in a few months will be invisible to the naked eye only to brighten again next year. North of Cetus, and close to the meridian, we see the little constellation of Aries, the leader of the zodiac. North of Aries, stretching east and west, appear Andromeda and Perseus, the head of the former touching the northeastern corner of the Great Square of Pegasus, nearly under which shines Saturn. Between Andromeda and the Pole Star is the ziz-zag of Cassiopeia. Away over in the west, sinking with a bright part of tthe Milky Way, appears the Northern cross in Cygnus. Below the Cross, toward the north, glitters the brilliant Vega in Lyra. The Great Dipper in Ursa Major is under the pole in the north. The Little Dipper hangs low downward, its handle pinned by the Pole Star at the upper end. Far down in the southwest the lone Fomalhaut, in the Southern Fish, flames upon the horizon, sinking from sight as Sirius in the opposite quarter rises higher and glows more brilliantly.

PLANETARY CONFIGURATIONS

Eastern Standard Time

December, 1951

Dec.	6— 7:00 AM	Venus in perihelion
Dec.	7— 5:26 AM	Conjunction, Jupiter and Moon; Jupiter south 4° 26'
Dec.	7— 6:00 AM	Mercury stationary in Right Ascension
Dec.	8— 7:00 PM	Mars in aphelion
Dec.	11— 1:00 AM	Mercury in ascending node
Dec.	15—12:24 AM	Conjunction, Uranus and Moon; Uranus south 3° 32'
Dec.	15— 4:00 PM	Mercury in perihelion
Dec.	16—10:00 PM	Inferior conjunction, Mercury and Sun; Mercury north 1° 54'
Dec.	19— 8:00 AM	Conjunction, Mars and Saturn; Mars south 0° 40'
Dec.	22—11:01 AM	Sun enters Capricornus; solstice
Dec.	22— 6:27 PM	Conjunction, Saturn and Moon; Saturn north 6° 23'
Dec.	22— 9:37 PM	Conjunction, Mars and Moon; Mars north 5° 50'
Dec.	23— 7:26 AM	Conjunction, Neptune and Moon; Neptune north 6° 1'
Dec.	25— 8:48 AM	Conjunction, Venus and Moon; Venus north 7° 44'
Dec.	25—11:00 PM	Mercury greatest heliocentric latitude north
Dec.	27—12:35 AM	Conjunction, Mercury and Moon; Mercury north 7° 56'
Dec.	27— 3:00 AM	Mercury stationary in Right Ascension
Dec.	27—10:00 PM	Quadrature, Jupiter and Sun
Dec.	27—11:00 PM	Venus greatest heliocentric latitude north

Orbits and Heliocentric Movements of the Planets for Dec., 1951

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

December, 1951

THE SUN: moves from Scorpio into Sagittarius during the month, and marks the solstice on the 22nd, thereafter beginning its slow march toward the north. Distance the 1st is 91.6 million miles; the 31st is 91.3 million miles.

THE MOON: is at apogee the 15th at 252,000 miles, and is at perigee the 28th at 222,000 miles.

The Moon's Phases (E.S.T.:

First Quarter	December	5	at 11:20 A.M.
Full Moon		13	at 4:30 A.M.
Last Quarter		21	at 9:37 A.M.
New Moon		28	at 6:43 A.M.

MERCURY: retrogrades from Sagittarius into Ophiuchus in the evening sky until inferior conjunction on the 16th, after which it will be a morning star. Visibility is restricted to the first few days of the month when it will be possible to sight this elusive planet low in the west just after sunset, and the last few days of the month when it will show up in the morning sky, just before sunrise, low in east. Magnitude at both times is about 0.0, and the planet is half illuminated, as seen from earth. Minimum geocentric distance, 63 million miles, is reached the 17th.

VENUS: reigns in the morning sky as it moves from Virgo into Libra. It is well placed for observation. Distance increases from 75 to 95 million miles, during the month.

MARS: is gradually assuming prominence in the morning sky in Virgo. On the 19th it is conjunction with Saturn (passing about a half degree to the south) and while Saturn will be a yellowish magnitude 1.0, Mars will be a ruddy magnitude 1.4. They will be a pretty pair in the morning sky. Mars is still very remote. On the 1st, distance of 171 million miles results in magnitude of 1.6 and diameter of 5.1"; on the 31st, distance of 144 million miles yields magnitude 1.3 and diameter 6.0". For telescope users (and 200 diameters upward are required now) the north pole of the planet is turned toward the earth, with the Martian season being late spring and, accordingly, the polar cap should be sizeable. Note, also, that Mars appears somewhat gibbous during the month with about 90% of its area as turned toward the earth, illuminated.

JUPITER: remains in Pisces, and though now well past opposition has faded little. Still a bright, interesting planet, with the four bright moons visible with any optical aid, and the bands on the disc of the planet visible in moderate telescopes. Distance the 15th is 431 million miles.

SATURN: rises shortly after midnight, in Virgo. It is rapidly getting better situated in the night sky, and will take over when Jupiter leaves the scene. The northern surface of the ring system is visible toward the earth, and is opened about 9° during December, meaning that a moderate sized telescope will reveal much of their structure. Apparent ring diameter is 38", equatorial planetary diameter 17", magnitude 1.0, and distance 918 million miles—all on the 15th.

URANUS: rises just after sunset, in Gemini, and is very well placed for observation. Magnitude is about 5.8, which brings it into range of the naked eye. In the telescope, moderate power will reveal its small (3.8") disc. Close to opposition. Distance the 15th is 1663 million miles.

NEPTUNE: holds forth in Virgo in the morning sky. A faint (8th magnitude) object, it cannot be seen without optical aid. At the end of the month Mars is a near neighbor, destined to pass about 7' north of Neptune early in January, and already less than a degree away. Distance the 15th is 2858 million miles.

Merry Christmas and A Prosperous New Year To The Subscribers of The Monthly Evening Sky Map.

As the year draws to a close, and we reflect upon our many pleasant relations, which it has been our good fortune to have had, it is indeed gratifying to find that we are able to extend a warm and friendly greeting to you and to your entire household.

Christmas time has come to be known as the season of happiness and joy—as being the time of year when the Spirit of Good Will abounds everywhere. And when we stop to consider it, what is the basis of it all? "Friendship." Friendship underlies our greatest motives and it is the spirit that makes Christmas the beautiful event that it is.

The fullness of the Spirit of friendship, equal to that in which we find ourselves delighting at the Holiday Season, can permeate our daily lives throughout the year if we so will it. In this little business, at least, it does; for here at all times I enjoy the warmth of friendliness from those whose confidence in my weak effort of bring them a monthly reminder of the stars, and a closer touch of the Creator, after a tired business day. And of these, I am grateful to know you as one. Your kind patronage, and benevolence since we were compelled to make this new change is greatly appreciated. Your support has helpfully contributed to the possibility of continuing the magazine without interruption.

We are faced with many difficulties here in the mountain. Therefore may I ask your patience for any seeming delay, since we are not fully organized as yet. You are aware that this magazine is still not commercialized; it is strictly maintained, and supported by the subscribers, their "Renewals" or by gifts to Schools, Libraries, or their friends with whom they desire to share their astronomical knowledge.

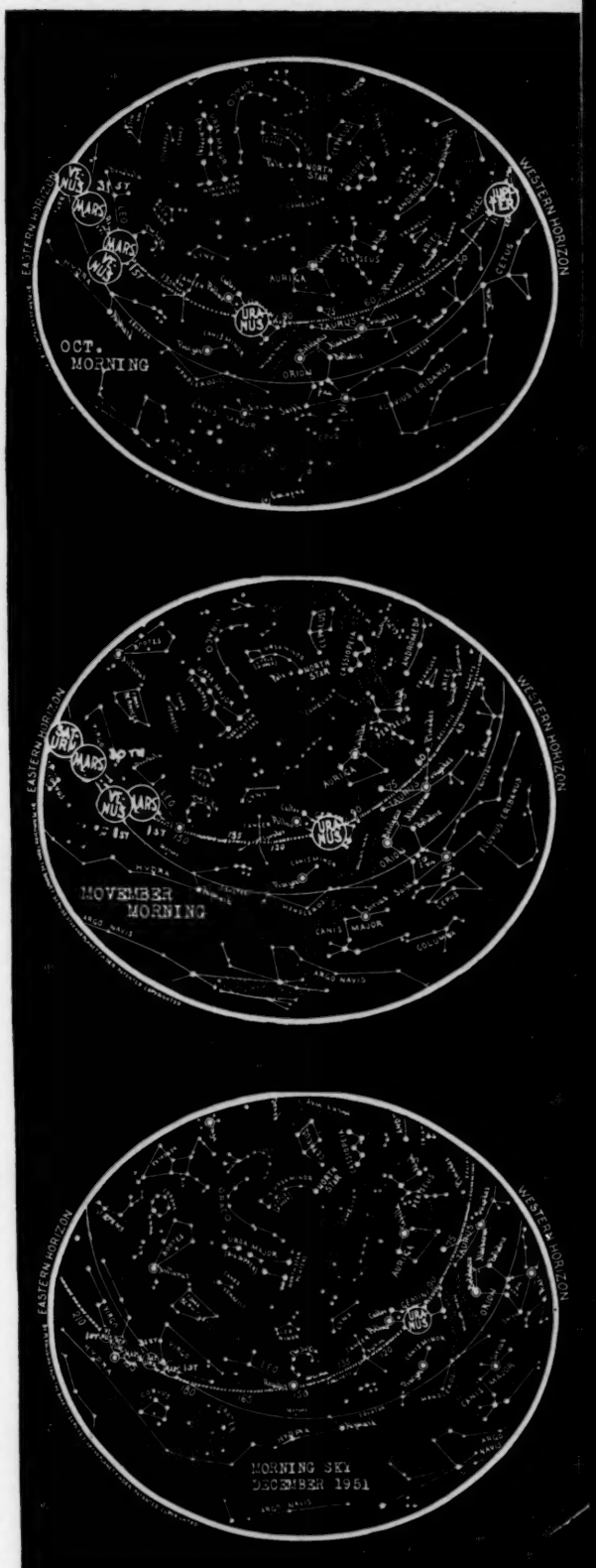
"Please share this knowledge with them now this Christmas." You will find in the Christmas Specials our Albums greatly reduced, this book cannot be printed now, and sold at this price again. This reduction is for the Christmas Holidays ONLY.

I am also sending you my deepest wish that the year 1952 may be most prosperous for you and yours, that this Holiday Season may be filled with joy and happiness unceasing.

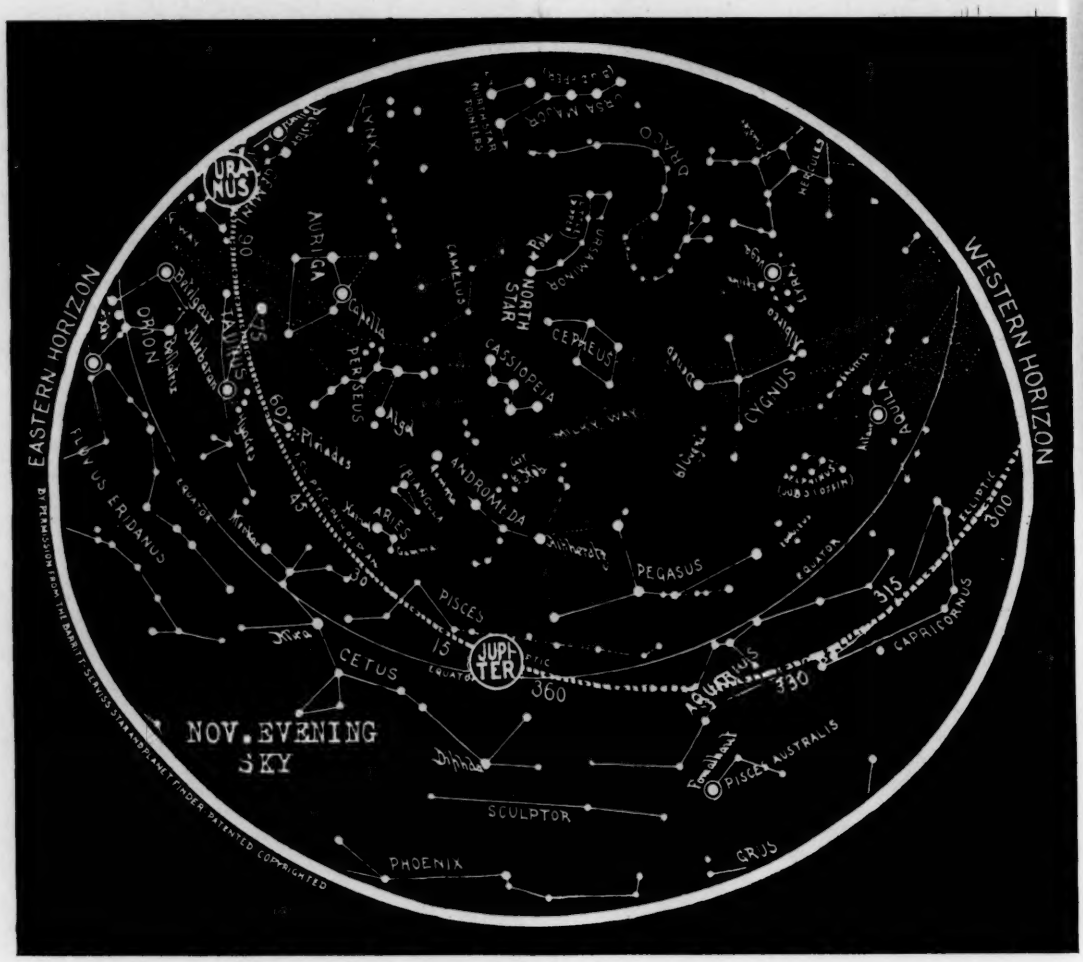
Cordially yours,
MARIA BARRITT

THE PUBLISHER OF THE MONTHLY EVENING SKY MAP will appreciate the kindly interest of its subscribers in sending the names of those whom they think to be interested in the study of the "STARS," we will take great pleasure in sending them sample copies.

MORNING SKIES FOR OCT.-NOV.-DEC.



EVENING SKY MAP FOR NOVEMBER



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This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

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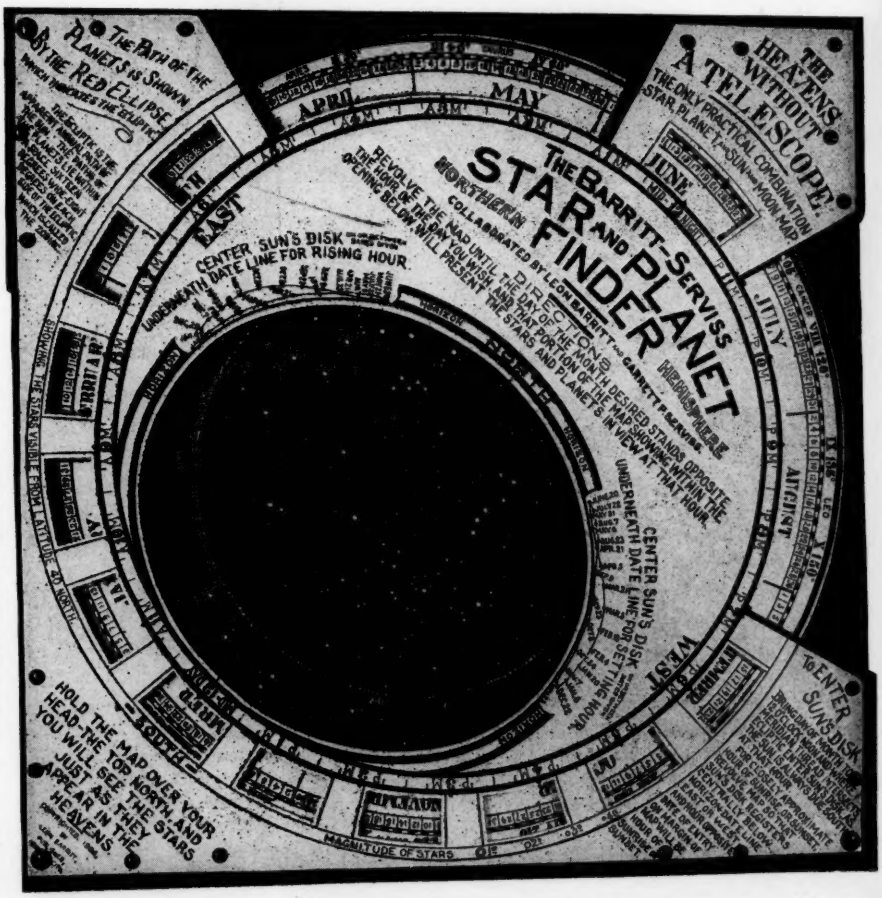
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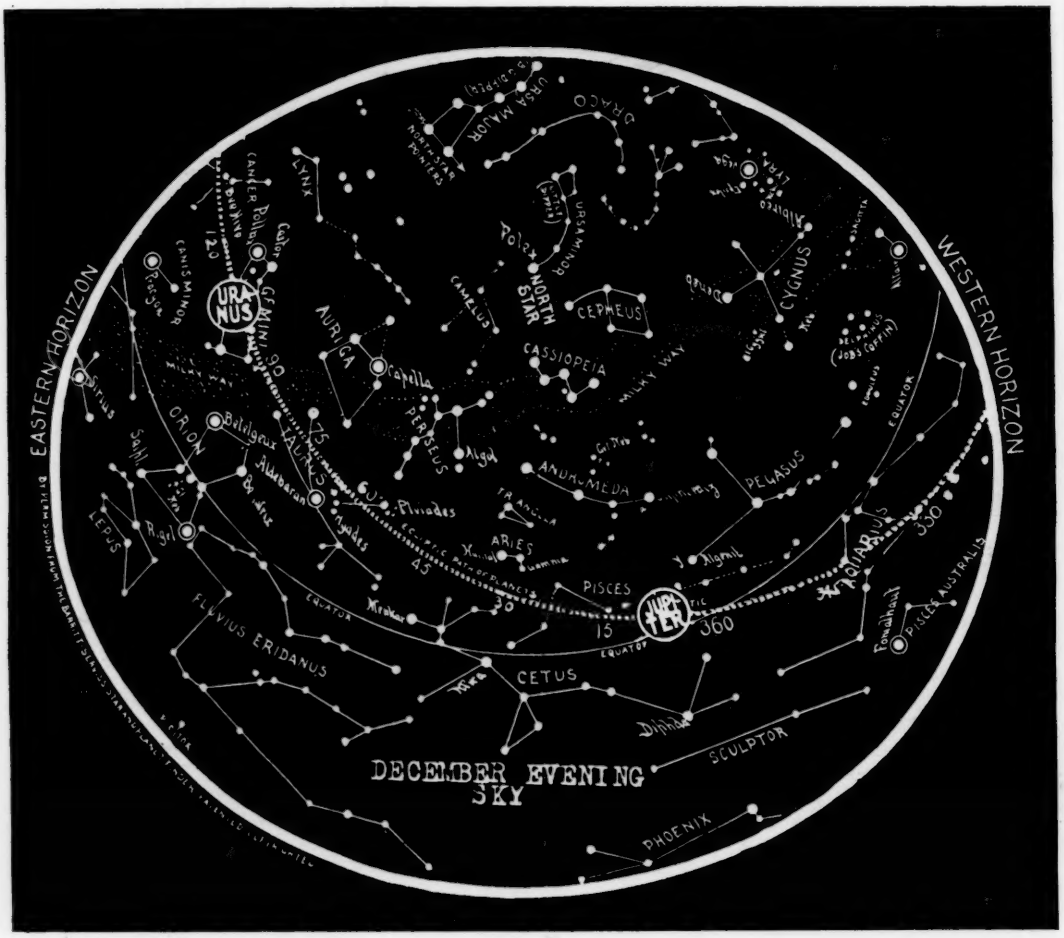
CENTER SUN'S DISK UNDERNEATH DATE LINE FOR SETTING HOUR
HOLD THE MAP OVER YOUR HEAD-THE TOP NORTH AND YOU WILL SEE THE STARS JUST AS THEY APPEAR IN THE HEAVENS
TO ENTER SUN'S DISK
MAGNITUDE OF STARS
EAST
WEST
SOUTH
APRIL
MAY
JUNE
JULY
AUGUST

XUM

EVENING SKY MAP FOR DECEMBER

NORTH



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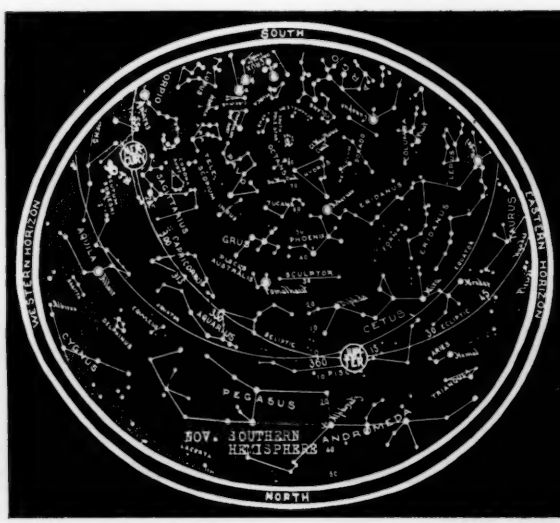
EVENING SKY SOUTHERN HEMISPHERE



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EVENING SKY SOUTHERN HEMISPHERE

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